

**CITY OF HOPE, IDAHO (PWSNO 1090052)
SOURCE WATER ASSESSMENT REPORT**

March 20, 2001



**State of Idaho
Department of Environmental Quality**

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the watershed characteristics.

This report, *Source Water Assessment for City of Hope, Idaho*, describes the public drinking water system, the zone boundary of water contribution, and the associated potential contaminant sources located within this boundary. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The City of Hope drinking water source is a composite spring located at the base of a 120-acre watershed on the hillside north of town. Because the springs are highly susceptible to microbial contamination from naturally occurring sources, the water is disinfected before distribution. The city needs to conduct microscopic particulate analyses to determine whether the springs are ground water under direct influence of surface water (GWUDI).

The risk of the springs becoming contaminated with organic or inorganic chemicals is low because the watershed is mostly forested and without roads.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the City of Hope, source water protection activities should focus on continuing to restrict any activity in the watershed that could contaminant the springs. The city owns the land around the springs, but should form partnerships with the Forest Service and any private landowners in the rest of the watershed to preserve its undisturbed character. Due to the short time associated with the movement of water through such a small watershed, source water protection activities should be aimed at short-term management strategies with the development of long-term management strategies to counter any future contamination threats.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact your regional IDEQ office or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR CITY OF HOPE, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted.

It is important to review this information to understand what the ranking of this source means. A map showing the delineated source water assessment area, and the worksheet used to develop the assessment also are attached.

Background

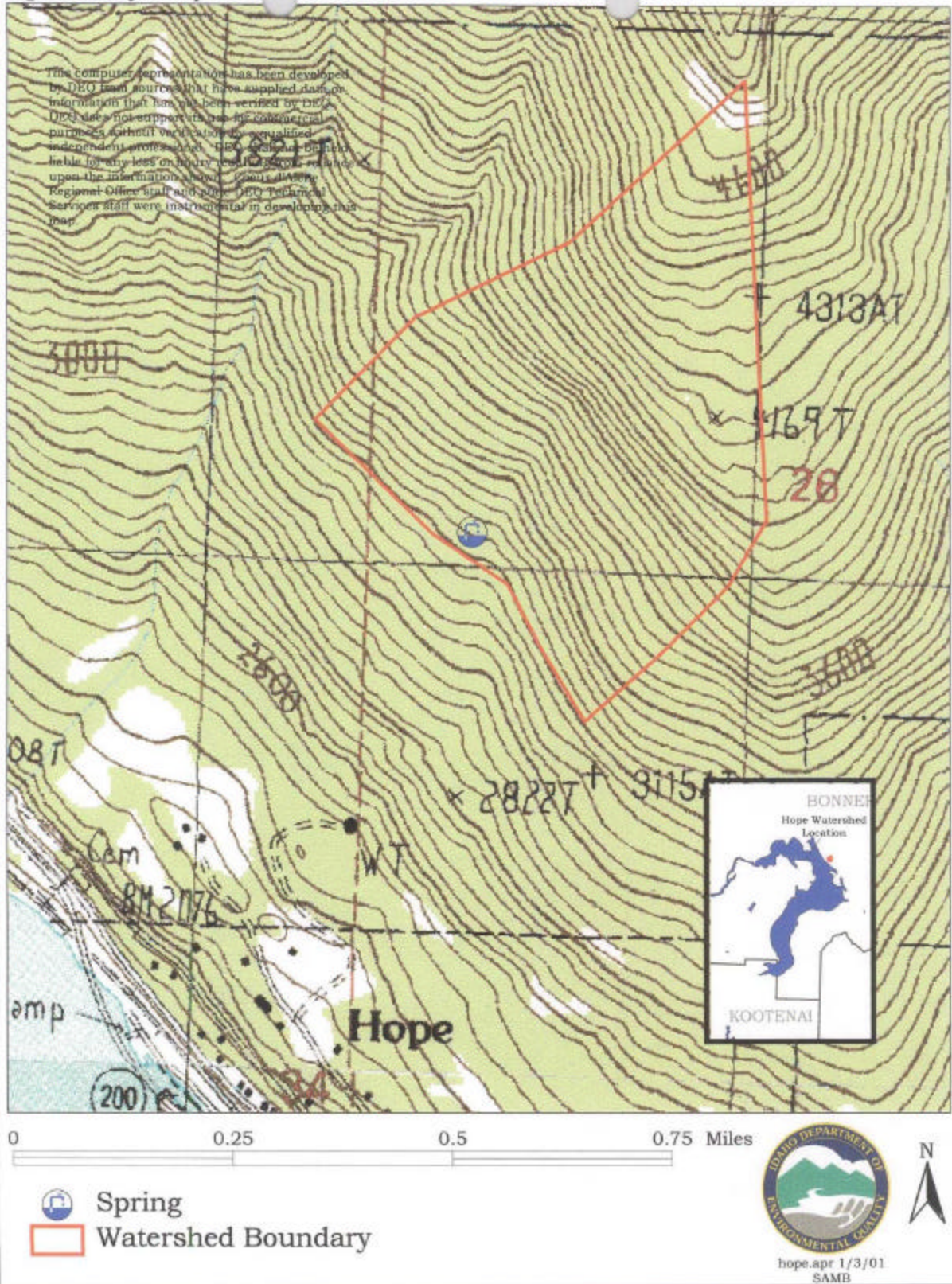
Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the intakes and watershed characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, time and resources to accomplish the assessments are limited. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply. The Idaho Department of Environmental Quality (IDEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. IDEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Figure 1. City of Hope. Watershed Delineation.



Section 2. Conducting the Assessment

General Description of the Source Water Quality

Hope, Idaho is a community of about 99 people, located on the northeast shores of Lake Pend Oreille. Public drinking water for Hope is supplied by three springs on the hillside north of town. The water is piped to a common reservoir before MIOX disinfection and distribution.

The primary water quality issue currently facing Hope is that of microbial contamination and the problems associated with managing this contamination. A MIOX disinfection system was installed in 1997, but total coliform bacteria were present in samples tested in October 1999 and November 1998 when the system failed to operate. Nitrates at concentrations dropping from 0.074 mg/l to 0.039mg/l were detected in samples tested between 1981 and 1993. The Maximum Contaminant Level (MCL) for nitrate is 10 mg/l. Nitrate has not been detected in samples tested since 1996. Radionuclides have been present in the water at levels below the MCL since testing began in 1982.

Defining the Zones of Contribution--Delineation

The delineation process establishes the physical area around a water source that will become the focal point of the assessment. The delineation boundary encompasses land draining toward the intake, and for the springs was mapped as a small watershed with the springs at the lowest point on the watershed boundary as it appears 7.5-minute USGS topographic map (Figure 1).

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of surface water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by IDEQ and from available databases.

The dominant land use inside the area delineated for the springs is undeveloped forest. The City owns the area immediately around the springs, and restricts activity in the watershed that might contaminate them.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply intake.

Contaminant Source Inventory Process

DEQ conducted a contaminant inventory in the area delineated for the springs which involved identifying and documenting potential contaminant sources through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. Sanitary surveys of the springs and information in the Public Water System file for the City of Hope were also reviewed. No potential contaminants other than naturally occurring microbials were identified in the watershed.

Section 3. Susceptibility Analyses

Significant potential sources of contamination were ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity and construction of the intake, land use characteristic, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. A high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each intake is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Intake Construction

The construction of water system intakes directly affects their ability to protect the source from contaminants. Low scores indicate a system constructed to protect the water. In this portion of the susceptibility analysis scores range from 0 to 3.

The City of Hope drinking water comes from three springs located on the hillside north of town. Perforated buried collection pipes feed into concrete stilling basins for two of the springs. A concrete basin with an arched cover and wooden doors collects water where it seeps from the bedrock at the other spring source. Water from all three springs is piped to a common storage tank and is disinfected before distribution. The springs, analyzed as a composite source, had a construction score of 3. Sanitary surveys indicate the lack of an infiltration gallery on Spring #1, and the presence of surface water at the upper end of the collection area for Spring #3.

Potential Contaminant Source and Land Use

The composite spring source automatically ranked highly susceptible to microbial contamination based on water sampling results and the presence of surface water drainage at the lower spring. Land use/potential contaminant source scores were zero for all other classes of regulated contaminants because the watershed is undeveloped forest land with no documented potential contaminant sites, and water quality has historically been very good with respect to IOCS, VOCs and SOCs.

Final Susceptibility Ranking

The final susceptibility score is derived by adding system construction scores to potential contaminant/land use scores. The worksheet showing how your system rated is on page 11 of this report. In terms of the total susceptibility score, the composite spring ranks highly susceptible to microbial contamination. The source is at low risk for IOC, SOC and VOC contamination. Results of the susceptibility analysis are summarized on Table 1.

Table 1 Summary of City of Hope Susceptibility Evaluation

Intake	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
	IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Composite Spring	0	0	0	H*	3	L	L	L	H*

H = High Susceptibility, M = Moderate Susceptibility, Low Susceptibility

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

H* - Indicates source automatically scored as high susceptibility due to detection of microbial contaminants, or an IOC, VOC, SOC above the Maximum Contaminant Level, or the presence of a significant contaminant source within 500 feet of the source water and 1000 feet of the intake,.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For the City of Hope, source water protection activities should focus continuing to restrict any activity in the watershed that could contaminant the springs. The city owns the land around the springs, but should form partnerships with the Forest Service and any private landowners in the rest of the watershed to preserve its undisturbed character. It would be useful for the city to inventory the watershed periodically with other landowners as a way of reminding them of the proximity of a public water source. In the area around the springs, the city should divert surface runoff from the intake structures, and implement other needed changes noted in sanitary surveys. The city needs to conduct the necessary tests for a GWUDI determination. Due to the short time associated with the movement of water through such a small watershed, source water protection activities should be aimed at short-term management strategies with the development of long-term management strategies to counter any future contamination threats.

Assistance

Public water suppliers and others may call the following IDEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the IDEQ office for preliminary review and comments.

Coeur d'Alene Regional IDEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

Website: <http://www.deq.state.id.us>

References Cited

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Division of Environmental Quality, 1994. Ground Water and Soils Reconnaissance of the Lower Payette Area, Payette County, Idaho. Ground Water Quality Technical Report No. 5. Idaho Division of Environmental Quality. December 1994.

EPA (U.S. Environmental Protection Agency), 1997, State Methods for Delineating Source Water Protection Areas for Surface Water Supplied Sources of Drinking Water, EPA 816-R-97-008, 40p.

U.S. Government Printing Office, 1995, Code of Federal Regulations, 40 CFR 112, Appendix C-III, Calculation of the Planning Distance

Idaho Department of Environmental Quality, 1999, *Protecting Drinking Water Sources in Idaho*.

Attachment A

City of Hope Susceptibility Analysis Worksheet

Susceptibility Analysis Worksheet

Public Water System Name : HOPE WATER SYSTEM

Source: COMPOSITE SPRG

Public Water System Number : 1090052

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1. System Construction		Score			
Intake structure properly constructed and located to minimize impacts from potential contaminants.	NO	1			
Infiltration gallery	NO	2			
Total System Construction Score		3			
		IOC	VOC	SOC	MICROBIAL
2. Potential Contaminant Source / Land Use		Score	Score	Score	Score
Predominant land use type (land use or cover)	BASALT FLOW, UNDEVELOPED, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
Significant contaminant sources *	YES	NATURALLY OCCURRING MICROBIAL CONTAMINATION			
Sources of class II or III contaminants or microbials	PRESENT WITHIN THE 500' OF THE INTAKE	0	0	0	1
Score = # Sources X 2. (8 Points Maximum)					2
Agricultural lands within 500 feet	NO				
Three or more contaminant sources	NO	0	0	0	0
Sources of turbidity in the watershed	NO	0	0	0	0
Total Potential Contaminant Source / Land Use Score		0	0	0	2
3. Final Susceptibility Source Score		3	3	3	5*
4. Final Source Ranking		LOW	LOW	LOW	HIGH*
* Automatically ranked highly susceptible due to significant contaminant:					

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

> 13 High Susceptibility

* High indicates the presence of significant contaminants within 500 feet of the source water and 1000 feet of the intake or the presence of regulated contaminants above the MCL in the water.

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as **Superfund** is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.